If a federal research agency program officer were to give you the following how-to advice for submitting a successful proposal in response to a specific solicitation at her agency, which research agency and program area would you guess she was talking about?

- Provide reviewers sufficient information in the proposal narrative so they do not have to guess at what you are planning to do and why you are planning to do it.
- Reviewers hate “trust me” proposals!
- Make the purpose of your research clear very early on in the proposal narrative
- Describe a vision for advancing your research goals
- Describe how your research will make a difference
- Reviewers will judge your proposal on—
  - How well you describe the importance of your research
  - How well you justify the importance of your research
  - How well you convince them you understand what is required to achieve your research goals
  - How well you describe how your research has been informed by prior research
- Reviewers will want to know—
  - What you propose to do
  - Whether your research is carefully laid out and organized in the proposal narrative
  - Whether your proposed research is novel and innovative
  - Whether your research advances the field
  - Whether your research is informed by existing research
  - How well your research serves as a research model or represents new research directions
  - The starting point and process plan that will achieve the purpose of your research
  - Whether your research questions advance theory
- What reviewers are looking for—
  - The research question(s) you will address
  - How carefully your research questions have been formulated (PIs are often confused by the relationship between research hypotheses and research questions—hypotheses help you develop research questions that tell reviewers exactly how you will explore your hypotheses)
  - How thoroughly your research questions are informed by the literature
  - The importance of the literature that informs your research
  - How significantly your research will contribute to the literature
  - Whether your research methods, design, and content are appropriate
How well your research methods are matched to answering your research questions

- How well your research questions and methods are matched to the stage of innovation of your research
- Whether your research adds to theory in such a way that it also adds to knowledge
- How easily reviewers can find answers in your proposal to all questions asked in the solicitation.

Your team – what will reviewers be looking for?

- To what extent does your team have the expertise to carry out the project?
- To what extent has that expertise clearly been used in putting the proposal together?
- What is your plan for using that expertise while carrying out the project?
- How well have you articulated team member expertise, roles, collaboration, and coordination in your Collaboration and Management Plan?

Well, one response to the opening question is that the above advice on submitting a successful research proposal is sufficiently generic that it could apply to all federal research agencies and any program they fund. In this case, however, the advice came during a February 18 Cyberlearning Webinar by Dr. Janet Kolodner, a program officer for the NSF Cyberlearning and Future Learning Technologies program. She is a Regents' Professor of Computing and Cognitive Science at Georgia Tech. Her points offer you a secret decoder ring for cracking the funding success cipher at NSF and other federal research agencies as well, similar to the key research questions that must be answered according to Heilmeier's Catechism. (Janet Kolodner, Program Officer, CISE/IIS and EHR/DRL, telephone: 703-292-8114, email: jkolodne@nsf.gov)

The above observations were made during the last 30 minutes of the 90-minute webinar, but their relevance goes well beyond the Cyberlearning program. While some webinars can be tedious repetitions of information easily gleaned from a close reading of the solicitation, this was an unusually informative webinar rich in detail, specificity, and program officer observations that provide an excellent insight not only into the Cyberlearning solicitation but into the culture of NSF’s Cross-Directorate programs as a whole.

Specific to the Cyberlearning program, there are multiple upcoming due dates for its four program areas. Cyberlearning is a Cross-Directorate program. It is worth noting that the program also seeks projects outside of STEM learning, with webinar examples including projects related to language learning or history. The bottom line, however, is that any proposed project must be informed by prior research. The webinar emphasized repeatedly the importance of reading the scholarly (not lay!) literature(s), particularly the extensive list of references in the solicitation that informs this program.

Also, be aware of the information available at The Center for Innovative Research in Cyberlearning (CIRCL). CIRCL works with projects in the emerging field of cyberlearning to support, synergize, and amplify their efforts. CIRCL is supported by NSF grant IIS-1233722. Information on this site will help you place your proposed project within the context of NSF’s overall objectives for the Cyberlearning program. Here again, proposers are encouraged to
make use of the Common Guidelines for Education Research and Development, published jointly by the National Science Foundation and the Institute of Education Sciences in the U.S. Department of Education, in developing their research methodology. However, the webinar noted that the Common Guidelines do not exactly fit the Cyberlearning objectives because the Guidelines assume a sequential or linear approach to research and development and NSF assumes foundational research in the context of Cyberlearning development. This is an important distinction, not just for this program, but for other NSF programs as well.

The overarching vision of the Cyberlearning program makes the following assumptions--

- New and emerging technologies will expand and transform learning—opportunities, interests, and outcomes—cradle to grave.
- The best of these will be informed by research on how people learn, how to foster learning, how to assess learning, and how to design environments for learning.
- New technologies give us new opportunities to learn more about learning

The purpose of the Cyberlearning program is to--

1. Advance design and effective use of the next generation of learning technologies, especially to address pressing learning goals, and
2. Increase understanding of how people learn and how to better foster and assess learning, especially in technology-rich environments

This will be accomplished by integrating opportunities offered by emerging technologies with advances in what is known about how people learn.

To this end, the Cyberlearning Program Scope includes--

- Populations, disciplines, and contexts for learning
  - all (not just STEM, not just formal, e.g., language learning or history)
- Technologies and interactions with them
  - all — hardware, software, combo, interactions with them, their integration into environments, must aim beyond state of the art
- Scholarly literature on learning and how people learn
  - Processes, representations, conditions, and influences associated with learning
  - Cognitive, neurobiological, behavioral, cultural, social, volitional, epistemological, developmental, affective, and other perspectives
  - Individual and collective learning

Finally, remember that what you are doing must advance current ideas about what is possible and have the potential to make a significant difference in how cyberlearning is conceived.

Webinar Archive

- Presentation slides and transcript
- Summary of Q&A
- Webinar recording with audio, slides, and Q&A discussion